

I Claim:

1. A ceramic composite body, comprising:

a first layer A containing phases of a metal and a carbide of said metal; and

a second layer B containing particles of silicon carbide bound in part by carbon binding phases and in part directly by sintered bridges; and

a ceramic composite body volume and ceramic composite body pores totaling from 10 to 35% of said volume.

2. The ceramic composite body according to claim 1, wherein:

a proportion of said pores in said layer A is under 20% by volume; and

a proportion of said pores in said layer B is from 5 to 35% by volume.

3. The ceramic composite body according to claim 1, wherein said proportion of said pores in said layer B is from 12 to 27% by volume.

4. The ceramic composite body according to claim 1, wherein:

said layer A has a density over 2.1 g/ccm; and

said layer B has a density under 2.55 g/ccm.

5. The ceramic composite body according to claim 1, wherein

said silicon carbide contains at least 25% silicon by mass.

6. The ceramic composite body according to claim 1, further

comprising a further layer A, said layer B being sandwiched between said layers A.

7. The ceramic composite body according to claim 1, wherein

said silicon carbide forms 70% by mass of said layer B.

8. The ceramic composite body according to claim 1, wherein

said layer B contains nitrides of at least one element selected from the group consisting of silicon, titanium, zirconium, boron, and aluminum.

9. The ceramic composite body according to claim 8, wherein:

said layer A contains nitrides of at least one element selected from the group consisting of silicon, titanium, zirconium, boron, and aluminum; and

said layers A and B have equal proportions of nitrides by mass.

10. The ceramic composite body according to claim 8, wherein a proportion of said nitrides in layer B is from 0.05 to 15% by mass.

11. The ceramic composite body according to claim 9, wherein said proportion of said nitrides in layers A and B is from 0.05 to 15% by mass.

12. The ceramic composite body according to claim 1, wherein said layer A contains at least 70% silicon carbide by mass.

13. The ceramic composite body according to claim 1, wherein at least part of a volume of said layer B not filled by said silicon carbide is filled by a filler with a hardness of at most 5 on Mohls' scale, said filler being selected from the group consisting of a plastic, a synthetic resin, an elastomer, a glue, and a metal.

14. A method for fabricating ceramic composite bodies, which comprises:

producing a green body containing powdered silicon carbide and a powdered metal nitride and a carbonizable organic binder in a first step;

carbonizing the green body into a porous carbon body containing carbon by heating in a non-oxidizing atmosphere to a temperature between 650° and 1800° C in a second step;

infiltrating the carbon body from a side with a metal melt containing silicon in a third step;

selecting the temperature to convert at least a portion of the carbon into carbides with a ligand, the ligand being selected from the group consisting of the metal melt and the silicon; and

selecting a quantity of the metal melt and the metal nitride to prevent the ligand from entering an inner region of the body.

15. The method according to claim 14, wherein the metal melt containing the silicon contains at least 25% silicon by mass.

16. The method according to claim 14, which further comprises selecting the metal nitride in the green body from the group

consisting of titanium nitride, zirconium nitride, silicon nitride, boron nitride, and aluminum nitride.

17. The method according to claim 14, which further comprises including in the green body carbon in a form selected from the group consisting of coke, natural graphite, synthetic graphite, carbonized organic material, carbon fibers, and glass carbon.

18. The method according to claim 14, which further comprises at least partly filling a porosity remaining in the composite body after the infiltrating step with a filler with a hardness of at most 5 on Mohls' scale, the filler being selected from the group consisting of a plastic, a synthetic resin, an elastomer, a glue, and a metal.

19. An armor, comprising a plate having at least two layers made from the ceramic composite body according to claim 1.

20. The armor according to claim 19, wherein said plate has an overall thickness from 6 to 300 mm.

21. The armor according to claim 19, wherein:

said layer A faces a load direction relative to said layer B;
and

a thickness ratio of said layer A to said layer B is at most 1:20.

22. The armor according to claim 19, further comprising a further layer A; said layer B being sandwiched between said layers A.

23. The armor according to claim 19, further comprising a layer of fiber material reinforcing a side of said plates averted from a load direction.

24. The armor according to claim 23, wherein said fiber material is a textile.